INSTRUCTION MANUAL

MULTIBOX IV

Pressure switch and control

Contents

1.0 Introduction

This manual is made and designed in order to facilitate the best and most secure interaction with the product. The manual is relevant for people involved in transportation, stocking, installation, using, maintaining and all other thinkable interaction with the product.

The manual must be read in full and understood before interacting with the product.

When the manual has been read and understood in full, the table of contents can be used to find the relevant information in each case.

The product is manufactured by:

Geovent A/S
Hovedgaden 86
DK-8861 Løgstrup
DENMARK

Tel.: (+45) 86 64 22 11
E-mail: salg@geovent.dk
www.geovent.com

This manual is to be used for all interactions with the product including: Transportation, stocking, installation, operation and maintenance.

This product is marked with: (example)


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13-701

MultiBox IV 0-4.000 Pa
```

2.0 Safety

2.1 General safety

Carefully read this manual before use and observe the safety instructions in order to avoid injuries!
Keep this manual in a safe place!

Secure that all users of the product have read this manual and that they follow the instructions as described.
Observe all instructions marked on the product!
Observe the indications of the manufacturer.
Never use the product if you are in doubt about how it works or what you should do.

When doing maintenance follow the instructions in chapter 7.0.

Do not modify the product or use spare parts from other suppliers than Geovent, as this may hamper the product and the function.

2.2 Danger

The product is not to be used in areas categorised as ATEX zones, e.g. with dust from aluminium, flour, wood, and other mediums that present an explosion hazard.

If a repair is not possible you should dispose of the product. Please follow the instruction for disposal in chapter 10.0.

3.0 Machine overview

3.1. Description

Proven construction
Geovent MultiBox IV is a 6th generation ventilation control unit based on the latest microprocessor technology.

More options in one box

Geovent MultiBox IV can be used for pressure measurement, control, regulation and monitoring with alarm in process ventilation systems in the pressure range from 0-4000 Pa.

Easy to use

The Geovent MultiBox IV is particularly suitable for dynamic pressure control in systems with control dampers and/or fans with frequency inverters. The desired pressure or flow (pressure differential) is entered as set point, after which the built-in controller will adjust the damper or frequency inverter. The alarm is activated if the pressure/flow does not stay within the selected alarm limits.

3.2 Intended use

Most process exhaust systems can be controlled to constant suction pressure, using a frequency inverter or regulating damper. The inlet air flow and room exhaust are balanced with the process exhaust using slave control or feedback control to a variable set point, calculated based on 0-10V signals from one or more suction points..

The MultiBox IV is recommended for the following:
- Frequency control of exhaust systems
- Control of DC motors in ventilation systems
- Control of rotary dampers and diaphragm dampers
- Balanced supply with multiple process extractors
- Feedback control with up to 3 set points
- Slave control of supply and extract air
- Pressure control in booths with exhaust and supply air

MultiBox IV has a built-in pressure sensor (0 - 4000 Pa). It can combine several exhaust and supply systems and regulate according to 3 set points. MultiBox IV has 3 digital inputs and 2 analogue and 4 relay outputs.
The alarm function complies with the requirements of the Danish Working Environment Authority.

3.3 Machine specifications

3.3.1 Design

MultiBox IV is made of hard plastic material.

3.3.2 Technical data

Dimensions

Model/Dimension	A [mm]	B [mm]	Weight [kg]
MultiBox IV	150	150	0,55

When ordering 1 pcs. MultiBox IV:

1 pcs. MultiBox IV incl. PG glands.
1 pcs. 2 m measuring hose ø6/4 mm in 2 m length.
2 pcs. Rubber grommet for fixing the hose to the duct.
1 pcs. Manual of the MultiBox IV.

4.0 Transport, handling and storage

During transport in a truck or in another means of transportation the product must be securely packed in a box or a pallet and covered with a water proff material.
The product must be securely stowed in the truck so that it will neither tilt nor shift during transport.

When moved it must be secured that the product does not tilt or shift.
The product must be placed in a dry place and covered securely, in order to secure that moist, metal parts or other substances do not damage the product.
It is not allowed to place anything on top of the product.

5.0 Assembly, installation and start of operation

5.1 Location

MultiBox IV is mounted on a fixed base, preferably a wall.

5.2 Installation

Installation of MultiBox IV as process ventilation control

MultiBox IV is used for PID feedback control of process extraction (or supply) by means of a frequency inverter or an electric or pneumatic damper. In addition, it contains a transmitter for slave control of balanced supply air or room extract air.

5.2.1. Setup and start-up

230V supply is connected to terminals N, L and if necessary PE. The installation is carried out according to the diagrams.

Current pressure and setpoint are read on the MultiBox display.
1: Main menu. 2: View all alarms, delete alarm list
3: Settings. 4: Device information with statistics list

5.2.2. Adjustment and regulation

General:
Note that there are 7 pages for setup in the settings menu.

To scroll through the pages, press the arrows on the right.

Press the Settings button and start setting up.

Settings	
Language	English
Setpoint 1 (Pa)	500
Setpoint 2 (Pa)	1.000
Setpoint 3 (Pa)	1.400
	Page 1/7

Page 1/7
Select language: DK, GB, DE, ES, FR
Enter setpoint 1
Enter setpoint 2
Enter setpoint 3

Example for entering values:

Setpoint 1 (Pa)	1.200

1	2	3	–	‹
4	5	6	'	
7	8	9	0	✔ ✕

It is recommended to follow the instructions below for setting up setpoints and other settings in MultiBox IV.

1. When the desired setpoint value is set, press ok on the check mark and the value is saved.
2. In Settings, all values can be changed or reset to default.

Settings	
Min. alarm (Pa)	20
Max. alarm (Pa)	4000
Shutdown delay (s)	10
Neutral zone (Pa)	3
	Page 2/7

Page 2/7
Alarm limits are set here:
Set monitor alarm min. limit (Pa)
Set monitor alarm max. limit (Pa)
Set time delay for shutdown
Set neutral zone from setpoint

Settings	
P-factor (PID)	3.000
I-factor (PID)	30.000
D-factor (PID)	0.000
Invert output #2	Off
	Page 3/7

Page 3/7
Set controller P-factor (speed)
Set controller I-time (damping)
Set controller D-factor (speed)
Set OFF 0-10V / ON invert 10-0V - Applies to output 2 only

It is recommended that P-factor be set to 0.001 and that I-factor be set to 0.001

Settings

Output 1 Min (V)	0.000
Output 1 Max (V)	10.000
Output 2 Min (V)	0.000
Output 2 Max (V)	10.000
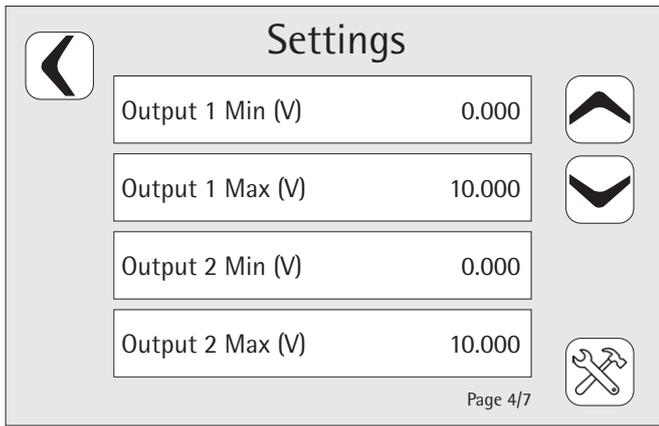
Page 4/7

Page 4/7
Adjust min. value for output 1
Adjust max. value of output 1
Adjust min. value for output 2
Adjust max. value for output 2

Settings

Start output value (V)	5.000
Start delay (s)	5
Start mode	On
Alarm delay (sec)	10

Page 5/7

Page 5/7
Set regulator start voltage
Set controller start time in seconds
Set start type ON/OFF
Set time delay before alarm signal

Settings

Disable alarm	Off
Mute alarm	Off
Enable Slave Fan	Off
DP Sens Offset	735

Page 6/7

Page 6/7
Set turn alarm on/off
Turn alarm signal on/off
Set fan slave signal option on/off 2
Calibration of pressure sensor - Not to be changed

Settings

PIN code	Off
Restore to Defailt	
Save Settings	

Page 7/7

Page 7/7
Turn PIN code on/off
Restore to factory settings if desired.
Save settings

Press the tool icon at the bottom right to enter the service settings

Service

Delta P nulstil: 0Pa	Reset stats.
Setup dato/tid	Selftest

Reset delta P
Set date/time - Date - Month - Year - Hour - Min - Sec
Selftest - test the system
Reset statistics

In order to follow alarm recordings and statistics, it is important to set the date/time before the MultiBox is put into operation.

5.2.3 Installation of MultiBox IV for Frequency Regulation

The following instructions describe the installation of the MultiBox IV for pressure regulation with a fixed setpoint of the frequency inverter.

Installation and start-up
The following **start-up** procedure is recommended:
• 230V supply is connected to terminals N, L and possibly PE
• The installation is carried out according to the diagrams.
• The alarm function is activated by changing the setting
• Enable in the display
• Electric damper requires separate power supply.

- AO1 is connected to frequency inverter for balanced inlet and provides flow.
- Alarm output connected to external alarm lamp
- R3 output changes simultaneously with control
- Control is activated from DI1, DI2 or DI3
- Alarm function is active if Enable is chosen in Settings
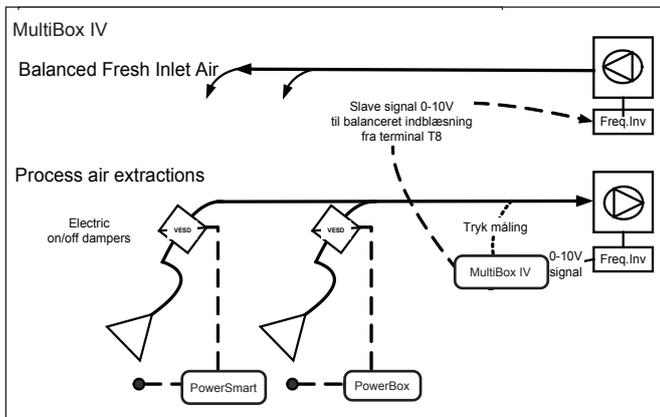
Installation with supply fan
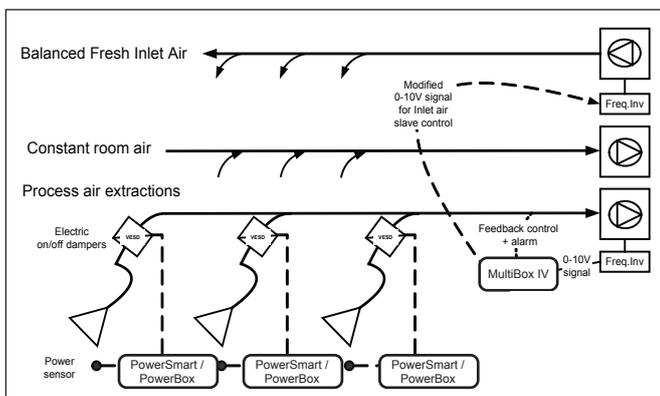
Installation with supply fan and external extraction

5.3 Control and test of the security system

- Extraction and supply systems are started
- MultiBox IV is connected to the filter or fan control
- Control is activated from DI1
- Connect measuring hose from (-) measuring socket to ventilation duct. The measuring point is selected on a straight piece of pipe, in the middle of the suction duct.
- The main display shows the actual measured pressure and the desired pressure: Setpoint I (Pa)
- The main screen displays the control signal (0-10V) from DI1
- Main screen displays slave signal (0-10V) from DI2
- The menu displays DI1, which is adapted to min. and max. limits for output 1 control signal
- The MultiBox IV controller should keep the frequency inverter stable at setpoint I after a short settling
- I time to be set according to recommendation
- P-factor to be set according to recommendation if unstable
- Neutral zone to be set as recommended if unstable
- Output 2 sends control signal (0-10V) to control supply fan to achieve balance with current process extraction and fixed room exhaust

6.0 Commissioning

Once the MultiBox IV is installed, set up and tested, it can be put into operation.

If the process runs as expected, no further adjustments are required.

It is possible to change settings when this is desired. See chapter 5.0.

It is possilbe to read statistics when desired.

If statistics on operation and alarms are desired, press the "i" icon on the main menu.

On the following screen: Press the "Statistic" icon and this will show
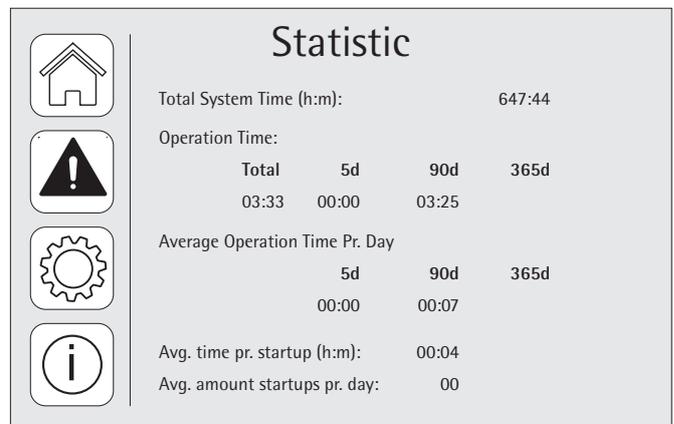
7.0 Control, test and maintenance

7.1 Control

Check the installation according to chapter 5.3.

7.2 Maintenance

Alarm
The alarm function is activated when the measured pressure is below min. or above max.

- The alarm function can be cancelled (stopped) by pressing the (Arrow-down) button on the main display.
- The alarm function can be tested by pressing the (ESC) button on the main screen for more than 10 seconds.
- Alarm limits can be adjusted as described in chapter 5.0.

Parametre

Headline	Def.	Min.	Max.	Description
Language				Choose DK, GB, DE, ES, FR
Setpoint 1 (Pa)	500	0	4000	Setpunkt 1
Setpoint 2 (Pa)	1000	0	4000	Setpunkt 2
Setpoint 3 (Pa)	1400	0	4000	Setpunkt 3
Min. alarm (Pa)	20	0	4000	Monitor alarm min. limit (Pa)
Max. alarm (Pa)	4000	0	4000	Monitor alarm max. limit (Pa)
Shutdown delay (s)	10	0	3600	Time delay to shut down
Neutral zone (Pa)	3	0	1000	Neutral zone from set point
P-factor (PID)	3	0	200	Regulator P-factor (speed)
I-factor (PID)	30	0	1.000	Regulator I-tid (dæmpning)
D-factor (PID)	0	0	1.000	Regulator D-factor (speed)
Invert output #2	OFF	OFF	ON	No = normal PID ; Yes = invert
Output 1 Min (V)	0	0	10	Adjust voltage limit for AO1
Output 1 Max (V)	10	0	10	Adjust voltage limit for AO1
Output 2 Min (V)	0	0	10	Adjust voltage limit for AO2
Output 2 Max (V)	10	0	10	Adjust voltage limit for AO2
Start output value (V)	5	0	10	Regulator starting voltage
Start delay (s)	5	0	240	Regulator start time in seconds
Start mode	ON	OFF	OFF	Start output value (V) / Start delay (s) ON/OFF
Alarm delay (sec)	10	0	3600	Time delay before alarm signal
Disable alarm	OFF	OFF	ON	Turn alarm on/off
Mute alarm	OFF	OFF	ON	Turn alarm sound on/off
Enable Slave Fan	OFF	OFF	ON	Enable fan slave signal on/off
DP Sens Offset	735	200	1000	Calibration of pressure sensor - Not to be changed
PIN KODE	OFF	OFF	ON	PIN code: 2211
DP Zero				0-point calibration
Setup date/time				Date - Month - Year - Hour - Min - Sec
Reset statistics				Reset statistics

Wiring diagram

Digital inputs:

DI1: Setpoint 1 (MultiBox is activated and setpoint 1 is controlled)

DI2: Setpoint 2
DI3: Setpoint 3
DI4: Free
12V: Common potential

Note: If setpoint 2 is activated while setpoint 1 is active, setpoint 2 is controlled. If setpoint 3 is activated while other setpoints are active, setpoint 3 is controlled.

Analogue outputs:

AO1: 0-10V speed signal
AO2: 0-10V slave signal (NB: can be inverted)
G: GND

Input for operation activation. When DI1 + 12V is connected (is active), the box is activated and regulates according to setpoint 1.

Relay outputs (C, NO, NC):

R1: Activation of filter control (e.g. for GE-OVENT self-cleaning filters (GFB/GFH..)

R2: Alarm (dp for low/high). For connection of external lamp/siren (e.g. 230V up to 4A)

R3: Press ok (dp within limit). Indicates that the installation is running as planned

R4: Start signal to inverter (ends when box is active.

0-10V signal to inverter.
Determines fan speed from setpoint 1.

When DI1 + 12V is connected (is active), the box is activated and regulates according to setpoint 1

Operation signal for inverter (start/stop).
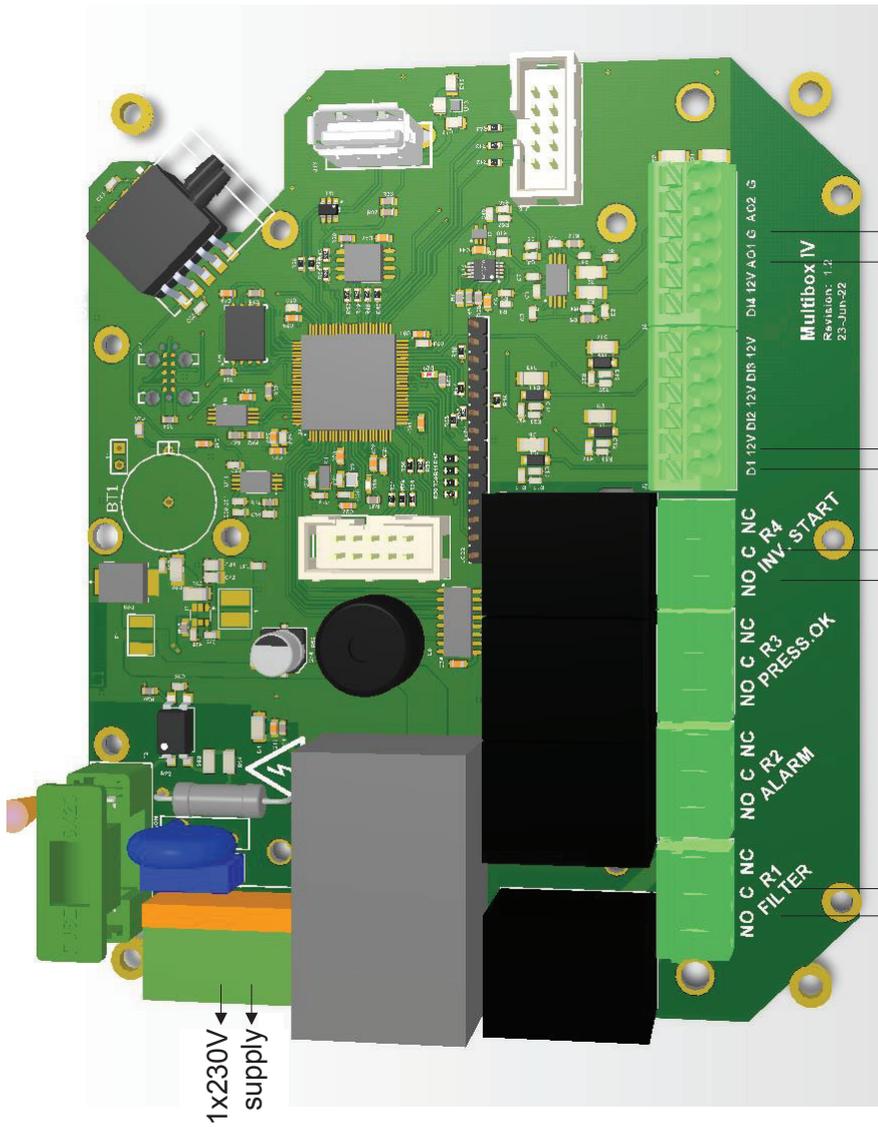
Operating signal for filter control (start/stop).
Tells the filter if the fan is running

1x230V supply

MULTI COUPLING DIAGRAM - TERMINALS, MULTIBOX AND FREQUENCY INVERTERS

Control on GFB2 Filter

Enable input
15
14

Place jumper

Fan input
13
12

J N O
230 V

MultiBox IV

AO1 G
D1 12V
R4 INVT start NO C — Input Start/Stop — Start/Stop signal
R1 filter C NO

J N O
230 V

Connect one of the following frequency inverters

Power Smart II

380V F F
N F J F — Sensing coil

N F
Terminals 1 2 3 4 5
GFD Damper 1 2 3

Machine/welder
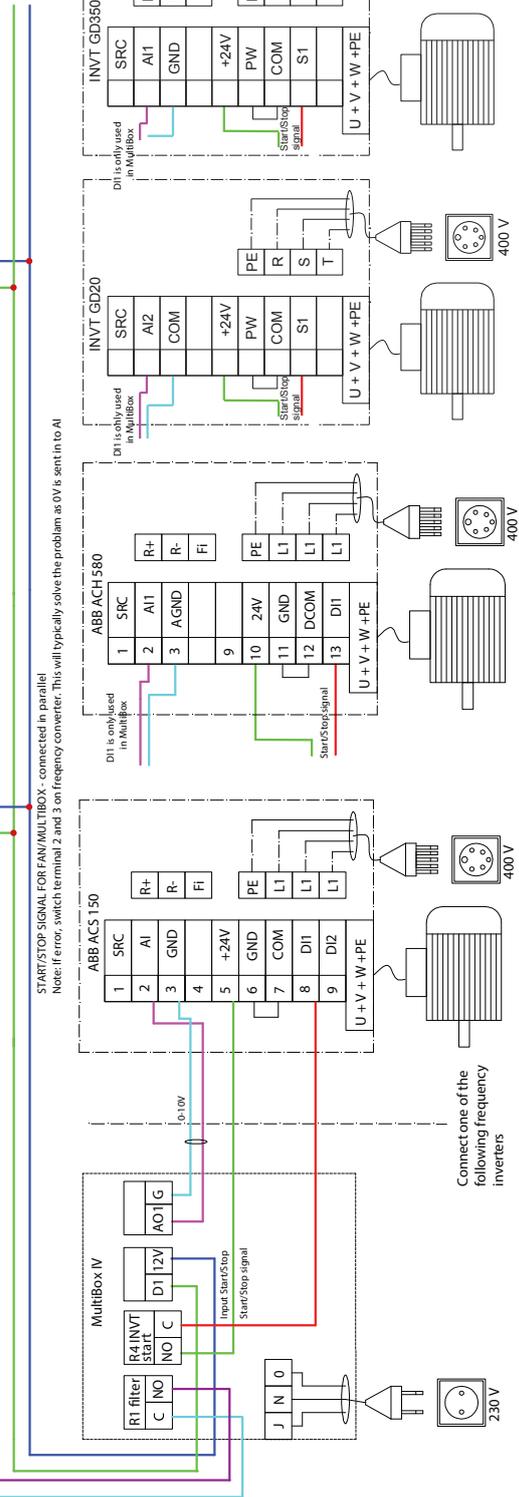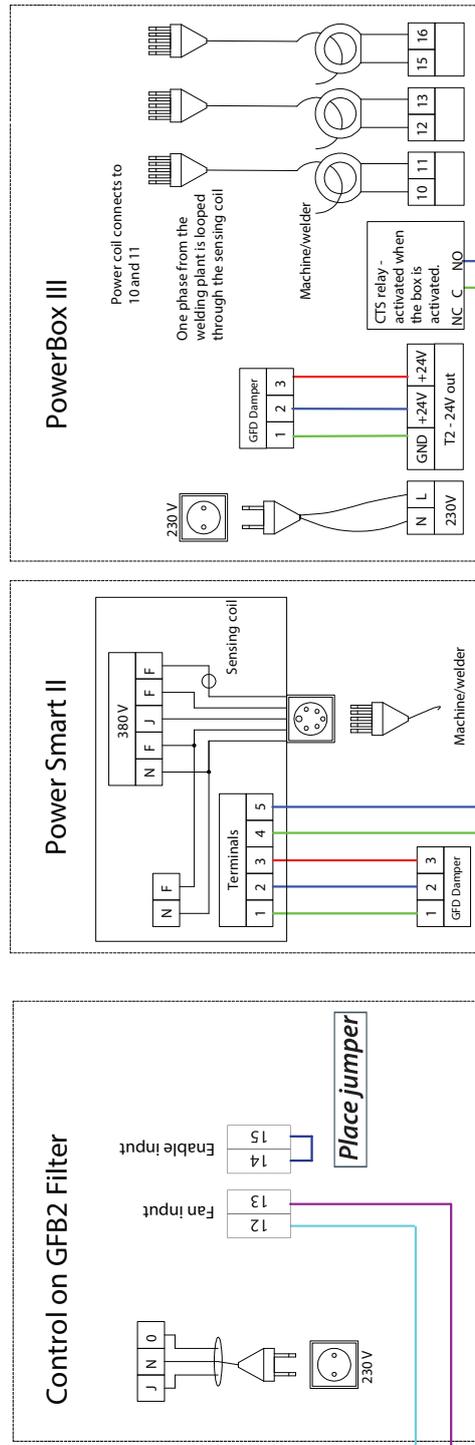
START/STOP SIGNAL FOR FAN/MULTIBOX - connected in parallel
Note: If error, switch terminal 2 and 3 on freqency converter. This will typically solve the problem as 0V is sent in to AI

PowerBox III

Power coil connects to 10 and 11

One phase from the welding plant is looped through the sensing coil

Machine/welder

15 16
12 13
10 11

CTS relay - activated when the box is activated.
NC C NO

GFD Damper 1 2 3
GND +24V +24V
T2 - 24V out

230 V
N L
230V

INVT GD350
SRC
AI1
GND
+24V
PW
COM
S1
U + V + W +PE

R+ R- Fi
PE R S T
400 V

DI1 is only used in MultiBox
Start/Stop signal

INVT GD20
SRC
AI2
COM
+24V
PW
COM
S1
U + V + W +PE

PE R S T
400 V

DI1 is only used in MultiBox
Start/Stop signal

ABB ACH 580
1 SRC
2 AI1
3 AGND
9
10 24V
11 GND
12 DCOM
13 DI1
U + V + W +PE

R+ R- Fi
PE L1 L1 L1
400 V

DI1 is only used in Multibox
Start/Stop signal

ABB ACS 150
1 SRC
2 AI
3 GND
4 +24V
5 +24V
6 GND
7 COM
8 DI1
9 DI2
U + V + W +PE

R+ R- Fi
PE L1 L1 L1
400 V

0-10V

10

Micro Switch

Common - (Black)

NC - Grey

NO - blue

Terminals: Max. external connection 250V, 6A

Functions:
Black/blue=Connect
Black/grey=break

230 V

GFD Power
N L
1 2

GFD Damper
1 2 3

Power Smart

Sensing coil

380 V
F F
J
N F J F

Machine/welder

N F

Terminals
1 2 3 4 5

GFD Damper
1 2 3

GTS Hose Reel

Contact set.
2 4
1 3

230 V

GFD Power
N L
1 2

GFD Damper
1 2 3

GTE Hose Reel

Contact Set.
2 4
1 3

230 V   230 V

GFD Power
N L
1 2

GFD Damper
1 2 3

Balance contact

2 4
1 3
Contact set.

230 V

GFD trafo
N L
1 2

GFD Damper
1 2 3

INVT GD350

R+ R- Fi

PE R S T

SRC AI1 GND   +24V PW COM S1

U + V + W +PE

DI1 is only used in MultiBox

Start/Stop signal

400 V

INVT GD20

PE R S T

SRC AI2 COM   +24V PW COM S1

U + V + W +PE

DI1 is only used in MultiBox

Start/Stop signal

400 V

ABB ACH 580

R+ R- Fi

PE L1 L1 L1

SRC AI1 AGND   24V GND DCOM DI1
1 2 3   9 10 11 12 13

U + V + W +PE

DI1 is only used in MultiBox

Start/Stop signal

380 V

ABB ACS 150

R+ R- Fi

PE L1 L1 L1

SRC AI GND +24V GND COM DI1 DI2
1 2 3 4 5 6 7 8 9

U + V + W +PE

DI1 is only used in MultiBox

Start/Stop signal

380 V

Connect one of the following frequency inverters

MultiBox IV

AO1 G

D1 12V

R4 INVT start
NO C

R1 filter
C NO

Input start/stop

Start/Stop signal

J N 0

230 V

START/STOP SIGNAL FOR FAN/MULTIBOX

Ect.

ABB ACS 150

Quick guide for frequency inverter setup.

If Multibox II is used, control mode is set at "REM".

"LOC"	=	Control using front panel.
"REM"	=	External PID control.

"AI" adjustment type is set to "U" on the micro switch (0-10V)
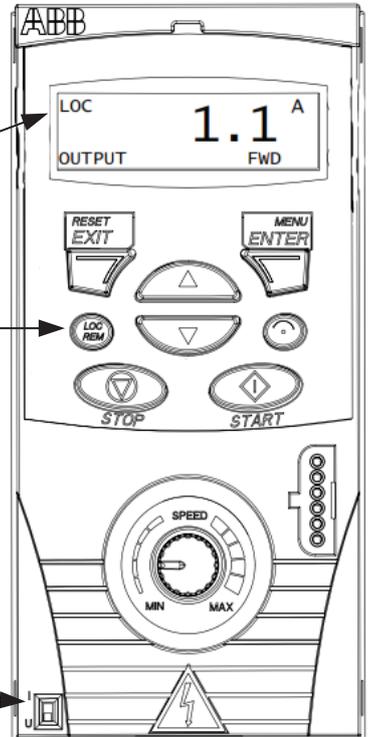
Access parameter list.

Exit   Arrows   Menu

Press menu and select Par L

Now it is possible to scroll through the parameter list using arrows. (Shown: example)

Motor data setup

Setup the motor´s rated voltage as indicated on the motor label. For example 400V

LOC	9905	S
	PAR	FWD

Setup the motor´s rated current as indicated on the motor label. For example 2,6A

LOC	9906	S
	PAR	FWD

Setup the motor´s rated frequency as indicated on the motor label. For example 50Hz

LOC	9907	S
	PAR	FWD

Setup the motor´s rated speed as indicated on the motor label. For example. 2830 rpm

LOC	9908	S
	PAR	FWD

Setup the motor´s rated power consumption as indicated on the motor label. For example 4Kw

LOC	9909	S
	PAR	FWD
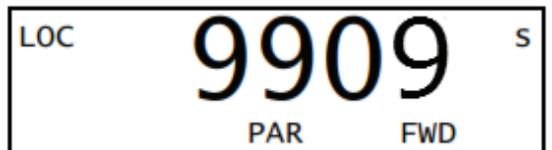
Operation Limits

Setup the allowed current. In many cases the same as indicated on the label on the motor. For example. 2,6A

LOC	2003	S
	PAR	FWD

Setup minimum frequency.
Set at 15Hz. If set lower, both fan and frequency inverter may suffer damage.

LOC	2007	S
	PAR	FWD

Set max. frequency.
Set at max allowed frequency for the current fan.

LOC	2008	S
	PAR	FWD

Ramp time setup.

Setup ramp up time.
Normally about 20 seconds.

(Ramp time correlates with fan size – the larger the fan, the longer the ramp time)

LOC	2202	s
	PAR	FWD

Setup ramp down time.
Normally about 50 seconds

(Ramp time correlates with fan size – the larger the fan, the longer the ramp time

LOC	2203	s
	PAR	FWD

Setup max reference.

Setup the value(Hz) of max reference voltage (10V).
If you want the fan to run at for ex. 55Hz set it at 55Hz.
(If you do not set this parameter the fan will not run faster than 50Hz)

LOC	1105	s
	PAR	FWD

This is a quick guide for setting up the frequency inverter with the minimu required settings.
These settings apply to a typical Geovent product constellation, and are not directly applicable for use with other products.
For settings of other parameters/macros and detailed explanation hereof, see the instructions manual from ABB.

ABB ACH 580

Quick guide for Frequency inverter setup.

Function keys

If Multibox is used, set control mode to "AUTO".

"Hand"	=	Control using front panel.
"Auto"	=	External PID control.
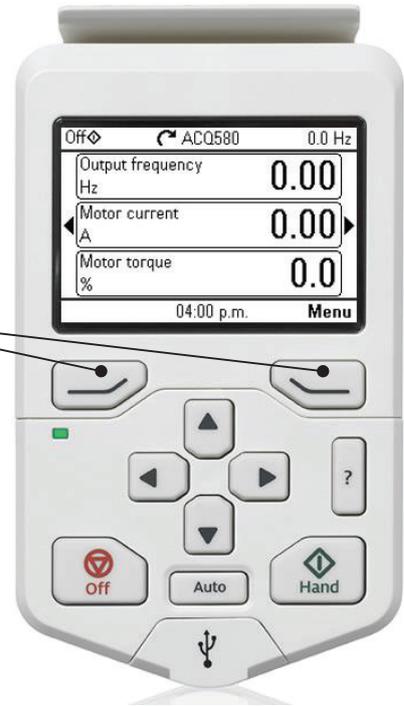
Access setup menu.

Press "menu"
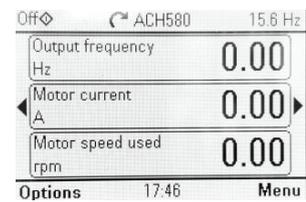
Select "Primary settings".
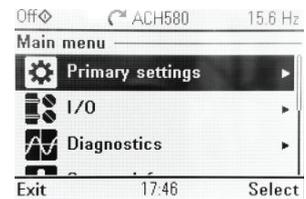
Now choose The parameter groups you need to setup. On the following pages you will be guided through the parameters we Recommend you setup.
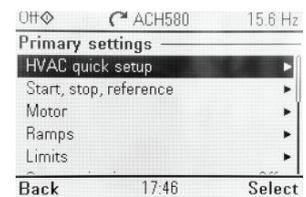
Motor data setup

In "primary settings" select "motor".
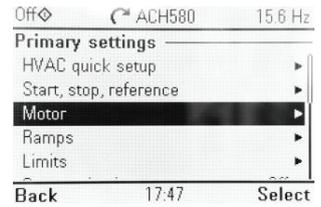
Setup the motor´s rated current as indicated on the motor nameplate. For exampel 2.6A

| 9906 | Current |

Setup the motor´s rated speed as indicated on the motor nameplate. For exampel 2830 rpm

| 9909 | Speed |

Setup the motor´s rated voltage as indicated on the motor nameplate. For exampel 400V

| 9907 | Voltage |

Setup the motor´s rated frequency as indicated on the motor nameplate. For exampel 50Hz

| 9908 | Frequency |

Setup the motor´s rated power comsumption as indicated on the motor nameplate. For exampel 4Kw

| 9910 | Power |

Operation limits

In "Primary settings" select "Limits".
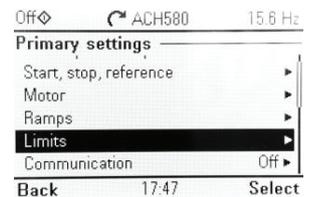
Setup minimum allowed frequency. Set at 15Hz. If set lower, both fan and inverter may suffer damage.

| 3013 | Minimum frequency |

Set maximum frequency.
Set maximum allowed frequency for the selected fan.

| 3014 | Maximum frequency |

Setup the max allowed current. In many cases this is the same as indicated on the motor nameplate. For example 2.6A

| 3017 | Maximum current |

Ramp time setup

In "Primary settings" select "Ramps".
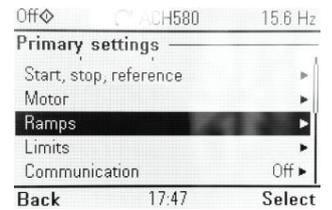
Setup ramp up time. Normally 20 seconds. (Ramp time correlates with fan size – larger fan = more ramp time)	2872 → Acceleration time

Setup ramp down time. Normally 50 seconds. (Ramp time correlates with fan size – larger fan = more ramp time)	2873 → Deceleration time

Setup max reference.

In "Primary settings" select "Start, stop,reference". In the following page select "Primary auto control location" and then "AI1 -scale" — 2211
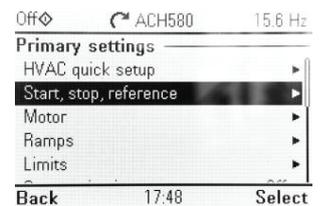
Setup the value(Hz) of max reference voltage(10V). If you set the parameter 2008 to ex. 55Hz then set this parameter to 55Hz too. — 1220 → Max scale

Setup start conditions.

In "Start, stop, reference" select "Interlocs/permissives".

Activate/deactivate DI4 as start condition.
Standard setting is DI4 is activated as start condition. We recommend removing the checkmark. — 2041 → Use start interlock 1

This is a quick guide for setting up the frequency inverter with the minimum required settings.
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Geodrive GD20

Quick guide to
setting up the frequency inverter

LED indikator
1: Run/Tune Fwr/Rev   Local/Remot   Trip
2: Hz   Rmp   Amp   Pct   Voltage
3: Display

Buttons
4: Function keys
5: Analog Potmeter
6: External Keypad input
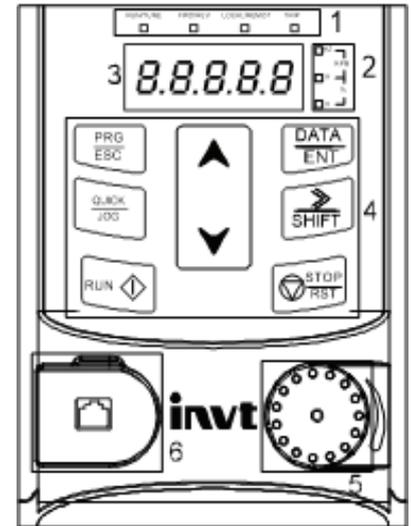
**NOTE: If controlling with Multibox, parameter
P00.01 must be set to "Terminal".**

Accessing the parameter list

| | 50.00 |

Press PRG/ESC button
| | P00 |

Use arrow keys to select parameter
| | P02 |

Press DATA/ENT to select which sub-group
| | P02.01 |

Here you can choose between the different parameter groups
that can be set in. Use the arrow key to select which parameter
you want to enter. On the following pages you will see the
settings we recommend as a minimum.

Setting up the data for the fan motor

Motor data is set under parameter

P02

Select "P02: Motor1 Param" to set the motor label data.

To change the values use the Shift key and the arrow keys

SHIFT ≫	▲
	▼

Set the rated power of the engine as indicated on the rating plate on the engine.   E.g. 4.0Kw.
Save by pressing "DATA/ENT".

P02.01: Ratedpwr of AM1

Set the nominal frequency of the motor as indicated on the rating plate on the motor.   E.g. 50Hz
Save by pressing "DATA/ENT"

P02.02: RatedFreq of AM1

Set the nominal speed of the motor as indicated on the rating plate on the motor.   E.g. 2830 rpm
Save by pressing "DATA/ENT".

P02.03: RatedSpeed of AM1

Set the rated voltage of the motor as indicated on the rating plate on the motor.   E.g. 400V
Save by pressing "DATA/ENT".

P02.04: RatedVolt of AM1

Set the rated current of the motor as indicated on the rating plate on the motor.   E.g. 2.6A
Save by pressing "DATA/ENT".

P02.05: RatedCur of AM1

Setting up limits

Under "Basic Function". P00

P00

Set maximum frequency. Set to the maximum allowed frequency for the current fan. Save by pressing "DATA/ENT".

P00.04: RunFreq Up limit

Set the minimum frequency to 15Hz, if set lower both fan and frequency inverter could be damaged. Save by pressing "DATA/ENT".

P00.05: RunFreq Low limit

Setting up Analog Input

Set which input is used for speed signal (0-10V) from e.g. MultiBox. Under normal circumstances AI2 is used.
Make sure P00.06 is set to 0. Check P00.07 is set to 2
Then set P00.09 to 1.
Save by pressing "DATA/ENT"

P00.06

P00.07

P00.09

Setting up ramp times

Set the ramp up time.
It is usually set to about 20 seconds.
Save by pressing "DATA/ENT".

P00.11: Acc time1

Set the ramp down time.
It is usually set to about 50 seconds.
Save by pressing "DATA/ENT".

P00.12: Dec time1

Setting up the max. reference

Set the value (Hz) for max. reference voltage (10V).
If the fan is to run e.g. 55Hz, set this to 55Hz.
Save by pressing "DATA/ENT".

P00.03: Max Output Freq

Setting up PID control

Set the value for which channel to control the PID control.
It is set to "2" which refers to AI2 (10V)
Save by pressing "DATA/ENT".

P09.00

This is a quick guide to setting the minimum required settings. These settings are for a typical standard Geovent product composition - and cannot be used directly with other products.
For setting up other parameters/macros and detailed explanations of parameters/macros, we refer to the manual from INVT.

Quick guide
Frequency inverter setup

LED indicator
1: Run
2: Trip/Fault

Buttons
4, 5, 6: Function keys (function shown above in display)
7: Quick jog
8: Enter/Select
9: Run (not activ if P00.01 is set to "terminal")
10: Stop/Reset
11: navigation key

NOTE: When used with MultiBox, parameter P00.01 must be set to "Terminal".

Access the parameterlist

Press menu.

Select "Grouping parameters".

This allows you to choose between different parameter groups. The following pages of this setup guide reflect the settings we reccomend as a minimum.

Setup motordata

To setup motordata select "Motor and encoder parameter"

Select "P02: Motor1 Param" to enter the nominal values for the motor.

Select motor type. Typical this is "Asynchronous motor".
Press "Conf" to save.

P02.00: Motor1 Type

Type in the nominal power of the motor as stated on the name plate. Eg. 4.0Kw.
Press "Conf" to save.

P02.01: Ratedpwr of AM1

Type in the nominal frequency of the motor as stated on the name plate. Eg. 50Hz.
Press "Conf" to save.

P02.02: RatedFreq of AM1

Type in the nominal speed of the motor as stated on the name plate. Eg. 2830rpm.
Press "Conf" to save.

P02.03: RatedSpeed of AM1

Type in the nominal voltage of the motor as stated on the name plate. Eg. 400V.
Press "Conf" to save.

P02.04: RatedVolt of AM1

Type in the nominal current of the motor as stated on the name plate. Eg. 2,6A.
Press "Conf" to save.

P02.05: RatedCur of AM1

Setup limits

In "Grouping parameters" select "Basic parameter setting".

In "Basic parameter setting" select "Basic Function".

Type in the maximum allowed frequency for the connected fan.
Press "Conf" to save.

P00.04: RunFreq Up limit

Type in the minimum allowed frequency for the connected fan. Do not go below 15Hz.
Press "Conf" to save.

P00.05: RunFreq Low limit

Setup analog inputs

In "Grouping parameters" select "Basic parameter setting".

```
12:00:28   Fwd        Local      Ready      GD350
Basic parameter setting
Motor and encoder parameter
Factory parameter setting
Terminal function parameter
Optional card parameter setting
Factory customized parameter
   Return            Homepage              Sele
```

In "Basic parameter setting" select "Basic Function".

```
12:00:28   Fwd        Local      Ready      GD350
Basic Function
Start/stop Control
Motor 1 Vector Ctrl
V/F Control
HMI
Enhanced Function
   Return            Homepage              Sele
```

Select which input is used for speed reference (0-10V) from MultiBox.
Usually this is AI1.
Press "Conf" to save.

P00.06: A Freq Cmd

Setup speed ramps

Type in acceleration ramp time. Usually around 20s.
Press "Conf" to save.

P00.11: Acc time1

Type in deacceleration ramp time. Usually around 50s.
Press "Conf" to save.

P00.12: Dec time1

Setup max. speed reference

Type in the value (Hz) that 10V speed reference translates to.
If the fan is allowed to run at 57Hz, set it to 57Hz.
Press "Conf" to save.

P00.03: Max Output Freq

Setting up PID control

Set the value for which channel to control PID control.
It is set to "1" which refers to AI1 (10V)
Save by pressing "DATA/ENT ENT".

P09.00

This is a quick guide for setting up the frequency inverter with the minimum required settings.
These settings apply to a typical Geovent product constellation, and are not directly applicable for use with other products.
For settings of other parameters/macros and detailed explanation hereof, see the instructions manual from INVT.

8.0 Cleaning

The outside of the product is cleaned with a vacuum cleaner or a cloth.

9.0 Troubleshooting

For problems with operation, please refer to installation, setup and testing in section 5.0.

Sometimes commuting is experienced
Pendulum may be caused by an imbalance in the system, where individual components get out of balance, and therefore fine tuning may be necessary.
Follow the guide below:

1. Always start by examining the measuring point. I.e. where is the pressure hose? This should be in a place where there is no turbulence.
   This is checked by putting the frequency converter in manual and reading if the fluctuations become smaller.
   If the measurements in the MultiBox are stable, this fault can be ruled out.
   If it continues to fluctuate, the measurement point must be moved.

2. The parameters P, I and D are changed in the MultiBox.
   • Neutral zone is set to e.g. 30 Pa
   • P-factor is set to 0,001
   • I-factor is set to 0,001

3. In most cases it is not necessary to change the neutral zone, but if the measuring point is very unstable, it may be helpful to set it to e.g. 30Pa.

4. The ramp times in the frequency converter are changed.
   Typically, longer ramp times will help.
   This could be changing the ramp up and down, for example from 10 to 20 seconds.
   The correct ramp time depends on the wheel size and rotation speed.
   The bigger the wheel, the longer the ramp time.
   • For ABB converters this is usually changed in parameter group 22-02 and 22-03, but always check the manual.
   • For GeoDrive inverters this is usually changed in parameter group P00.11 and P00.12, but always check the manual.

10.0 Dismantling, disabling and scrapping

Deactive the product by disconnection the electrical mains. Dismantle compressed air pipes and other pipes or wires etc.
Dismantle the filter cartridge by unscrewing the finger screws and remove the service hatch.
Turn the filter cartridge so that is loosens from the latches at the top of the cartridge.
Carefully remove the contaminated filter cartridge, place it in a plastic bag and seal the bag.
Dispose of it according to local regulations.
The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.
The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.

Dismantle plastic parts and dispose of it according to local regulations.

Dismantle the metallic parts by unscrewing screws and bolts. Afterwards cut the larger pieces into smaller pieces and dispose of it according to local regulation.

Dismantle plastic parts and dispose of it according to local regulations.

The packing material must be sorted according to local regulation in order to be able to reuse the material.

11.0 Dimensions

MultiBox IV
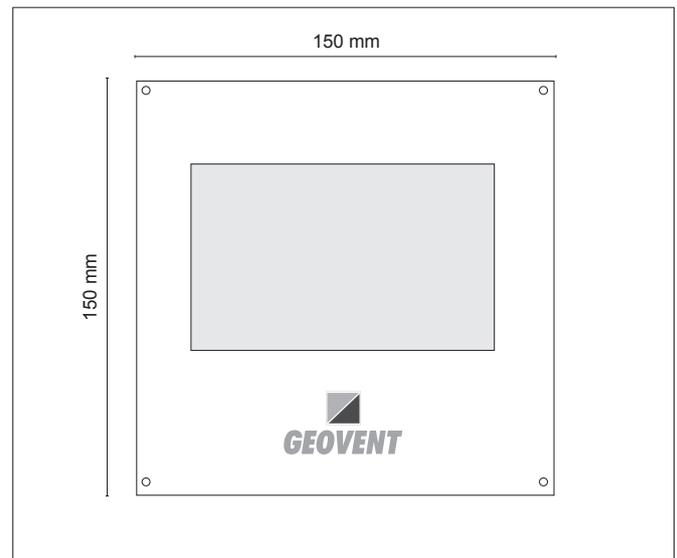
12.0 Liability

Warranty
Geovent A/S grants a warranty for products, which are defective, when it can be proved that the defects are due to poor manufacture or materials on the part of Geovent. The warranty comprises remedial action (reparation or exchange) until one year after the date of shipment.

No claims can be made against Geovent A/S in relation to loss of earnings or consequential loss as a result of defects on products from Geovent.

Wear on parts such as filter cartridges and hose is not included in the warranty.

User liability

In order for Geovent to be capable of granting the declared warranty, the user/fitter must follow this instruction manual in all respects.

Under no circumstances may the products be changed in any way, without prior written agreement with Geovent A/S.

Please refer to the current sales and delivery conditions at www.geovent.com

13.0 Declaration of conformity

The manufacturer: GEOVENT A/S
                       HOVEDGADEN 86
                       DK-8831 LØGSTRUP

Hereby declares that:

The product: MultiBox
Model: IV

Complies with the relevant parts of the following directives and standards:

Directive 2006/42 / EC of the European Parliament and of the Council of 17 May 2006 on machines and amending directives 95/16 / EC.

This declaration is no more valid if changes are made to the product by others than the manufacturer.

Authorized to collect the technical file:

                 Lise Cramer

Date: 26.01.2024

Position: Director
Name: Thomas Molsen

Signature: _____

$C\epsilon$

GEOVENT